

# A NEW GENUS AND TWO NEW SPECIES OF ARCTIINAE, ARCTIIDAE: LEPIDOPTERA, FROM INDIA<sup>1</sup>

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(With eighteen text-figures)

**Key words:** *Juxtarctia*, *J. monospinuatus* sp. nov., *J. bispinuatus* sp. nov., genitalia, scales

Two new species *monospinuatus* and *bispinuatus* referable to a new genus *Juxtarctia* are reported from India. The new genus is closely related to *Spilarctia* as far as general maculation and wing pattern are concerned. However, its unique, large juxta on the male genitalia makes it different from *Spilarctia*. The shape of valva and alar expanse are some of the other important features of the new genus. Both the new species can also be separated easily on the basis of aedeagus armature.

## INTRODUCTION

During the surveys undertaken for the collection of Arctiid moths from various states of northeast and northwest India, a complex phena consisting of seven representatives, was collected from Jatinga (North Cachar Hills) Assam and Nauri (Solan district) Himachal Pradesh. All these individuals possessed a similar type of maculation and wing pattern, and their tentative sorting led to the inference that they belong to two closely allied species under genus *Spilarctia* Butler. However, both of them could not be identified from the relevant literature (Hampson 1894, 1901; Arora and Choudhary 1982) or from material available in the National Museums and the Natural History Museum, London. Hence, both these species are new and closely allied with each other on the basis of maculation and genitalia. These undescribed species are also closely related to *Spilarctia multiguttata* (Walker) on the basis of ground colour and general maculation, but are clearly different with respect to different genital structures and certain other morphological features. Comparison of the genital features of these two species with those of the type species of *Spilarctia* Butler and the congenics, *S.*

*multiguttata* (Walker), *S. casignata* (Kollar), *S. rubilinea* (Moore), *S. erythrozona* (Kollar), *S. leopardina* (Kollar), *S. comma* (Walker), *S. niceta* (Stoll), and *S. obliqua* (Walker), reveal that the two species are unique. Nor can they be placed in the allied genera *Thanatarctia* Butler, *Spilosoma* Stephens and *Diacrisia* Hübner. The type species of these genera are clearly different and Koda (1988) has already differentiated all these genera in his paper entitled, "Generic classification of Subfamily Arctiinae of the Palaearctic and Oriental regions based on male and female genitalia". He examined the genitalia of twenty-two species of genus *Spilarctia*, along with species of *Thanatarctia*. He also erected a new genus *Cladarctia* Koda on the basis of the unique male genitalia of an Indian species.

The large and unique juxta, which is not seen in any other genus, the large alar expanse, and two pairs of semicircular signa in the corpus bursae of female genitalia distinguish the genus under consideration from the abovementioned i.e. *Spilarctia*, *Spilosoma*, *Thanatarctia*, *Diacrisia* and *Cladarctia* genera. Hence, a new genus *Juxtarctia* is proposed here to accommodate the two new species. The species *bispinuatus* is designated as the type of the new genus.

The types are deposited in the Museum of Zoological Survey of India, Kolkata (Regn. No. JS-Zoo-Mus-101).

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## SYSTEMATICS

Genus *Juxtartia* gen. nov.

Type Species: *Juxtartia bispinuat* sp. nov.

Distribution: Assam and Himachal Pradesh.

Diagnosis: Labial palpus long and porrect, reaching lower level of frons. Antenna bipectinate in male, serrate in female. Forewing with ground colour white, prominent black spots present; vein  $R_1$  originating from cell; vein  $R_2-R_5$  stalked from upper angle of cell;  $M_2$  and  $M_3$  closely approximated from lower angle;  $Cu_1$  and  $Cu_2$  arising from well before lower angle of cell. Hindwing with vein  $Sc+R_1$  originating from before middle of cell;  $M_1$  from upper angle;  $M_2$  from near lower angle;  $Cu_1$  from before lower angle of cell;  $Cu_2$  from middle of cell. Hind tibia with two pairs of spurs.

Male genitalia with uncus of moderate size, swollen dorsally, tip curved; acrotergite well developed; fenestrula absent; tegumen longer than vinculum; vinculum short, with outer walls slightly produced; saccus small and curved; valva simple, with broad basal half and narrow cylindrical apical half; saccular margin produced into a rounded flaplike projection; sacculus and costa well defined; juxta exceptionally large and unique, broad at base, with two parallel sclerotized dilated flaps, supporting triangular bifurcated apical half; transtilla broad; aedeagus of moderate size, distinct sclerotization at distal end, bearing one or two large distinct spines; vesica armed with denticles and numerous spines.

Female genitalia with corpus bursae membranous, irregular in shape, having distinct cervix bursae; accessory sac present; two pairs of semicircular serrated signa; ductus bursae strongly sclerotized, narrow above and broad at distal end; anterior apophyses less than half the length of posterior apophyses; anterior apophyses with their apices pointed, posterior apophyses

with blunt tips; papilla analis rounded and broad, fringed with an array of micro and macro setae.

KEY TO THE SPECIES OF GENUS *Juxtartia* gen. nov.

- 1 Forewing with veins  $R_2-R_5$  stalked from before upper angle of cell,  $M_2$  and  $M_3$  minutely stalked from lower angle of cell; hindwing with vein Rs arising from before upper angle of cell; male genitalia with uncus having blunt tip; valva with apical portion of equal width, tip broad; juxta with apical margin bearing well sclerotized small setae; aedeagus with two prominent spines at distal end ..... *bispinuat* sp. nov.
- Forewing with vein  $R_2-R_5$  stalked from upper angle,  $M_2$  from just above lower angle,  $M_3$  from lower angle of cell; hindwing with vein Rs from upper angle of cell; male genitalia with uncus having pointed tip; valva with apical portion gradually narrowing towards its tip; juxta with apical margin without any armature; aedeagus with a large prominent spine at distal end ..... *monospinuat* sp. nov.

*Juxtartia bispinuat* sp. nov.

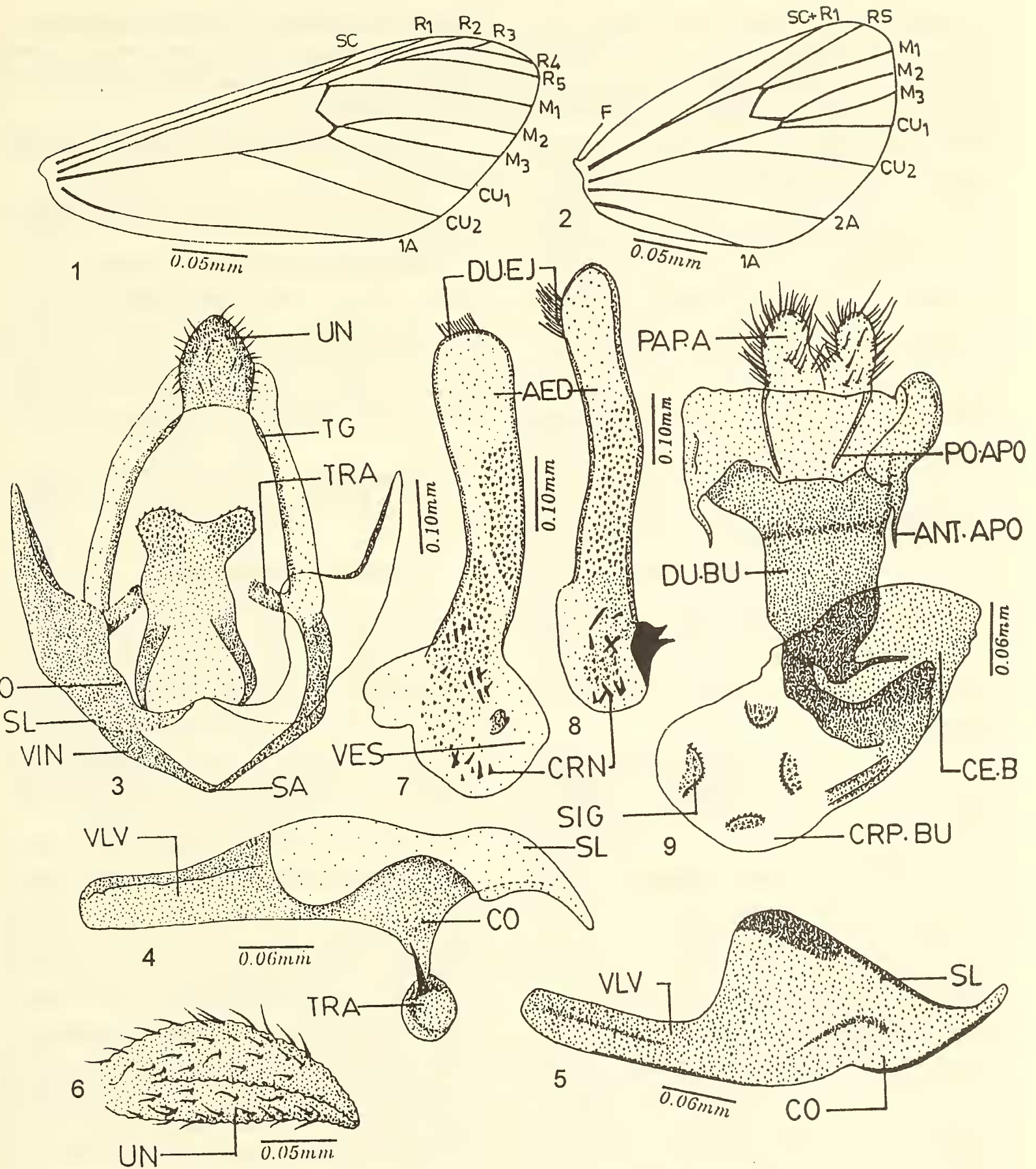
(Figs 1-9)

Head with vertex and frons furnished with orange yellow scales. Antenna with scape having orange yellow scales, flagellum black. Eyes golden brown. Labial palpus long and porrect, reaching lower level of frons; first segment decorated with black scales, underside fringed with yellow; second and third segments black.

Thorax clothed with white scales; meso- and metathorax bear black spots; collar covered with orange scales and black spots; tegula white, spotted with black. Forewing with ground colour white; a basal black spot; three subbasal black spots; a streak-like spot on costa; an antemedial series of five spots, those below cell and 1A being placed outwards; a medial series of seven spots, excurved strongly at lower margin of cell; two prominent spots in cell and one beyond discocellulars; two postmedial series, first of nine spots, excurved below costa, incurved below vein



NEW DESCRIPTIONS



Figs 1-9: *Juxtartia bispinuatius* sp. nov., 1. Forewing, 2. Hindwing, 3. Male genitalia, 4. Valva (left) - ventrolateral view, 5. Valva (left) - inner view, 6. Uncus - lateral view, 7. Aedeagus - dorsal view, 8. Aedeagus - ventral view, 9. Female genitalia

M<sub>3</sub>; second again of nine spots, excurved in middle; submarginal series of paired spots on veins M<sub>2</sub> to Cu<sub>1</sub> and a black dot on Cu<sub>2</sub>; six marginal spots present; veins R<sub>2</sub>-R<sub>5</sub> stalked from before upper angle of cell; M<sub>2</sub> and M<sub>3</sub> minutely stalked from lower angle of cell. Hindwing with ground colour orange yellow; in male, two antemedial black spots, one on costa and another in cell; in female, an antemedial series of spots on either side of upper and lower margin of cell and vein 2a, becoming larger towards costa; two postmedial spots, one on costa and another below Sc+R<sub>1</sub>; discoidal spots one on inner side and another beyond discocellulars; submarginal series of paired spots on veins Rs, M<sub>2</sub>, Cu<sub>2</sub> and 2A; five marginal spots; fringe orange; vein Rs originating from before upper angle of cell; M<sub>2</sub> from above lower angle of cell; Cu<sub>1</sub> from before lower angle of cell. Legs with coxae clothed with yellow scales, fore coxae with large black patches; femora furnished black above, pale yellow below; tibia and tarsi dressed with yellow scales, streaked with black; outer tibial spurs almost half length of inner spurs.

Abdomen decorated with orange yellow scales; short segmental bands on dorsal side except on first two segments; last segment with a prominent black spot; lateral and submarginal series of black spots. Male genitalia with uncus short, broad, strongly swollen dorsally, setosed, tip slightly curved, blunt; tegumen broad and sclerotized, almost double the length of vinculum; vinculum broad towards tegumen, narrow towards saccus; saccus small, V-shaped. Valva broad, sacculus distinct, narrow at basal end, constricted in middle with flap-like projections; costa well defined, cucullus and valvula fused into a rounded cylindrical distal half; juxta large and unique with lateral flaps broad, triangular projection slightly notched, with layers of well sclerotized setae; transtilla rounded, oval, semisclerotized.

Aedeagus long, slightly curved in middle, both of its walls equally sclerotized, with a

distinct sclerotization at distal end, bearing two distinct, but unequal, blunt spines; vesica armed with large number of denticles and distinct pointed cornuti.

Female genitalia as described in diagnosis of the genus.

**Wing Expanse (Half):** Male 25 mm; Female 25 mm.

**Material Examined:** Holotype: INDIA: Assam: North Cachar Hills, Jatinga, 900 m, 1.x.1995, one male. Coll. A.P. Singh. Paratypes: INDIA: Assam: North Cachar Hills, Jatinga, 900 m, 1.x.1995, one male, Himachal Pradesh: Nauni, 900 m, 2.viii.1994, one female, Coll. A.P. Singh.

**Etymology:** The name of the species pertains to the armature of aedeagus.

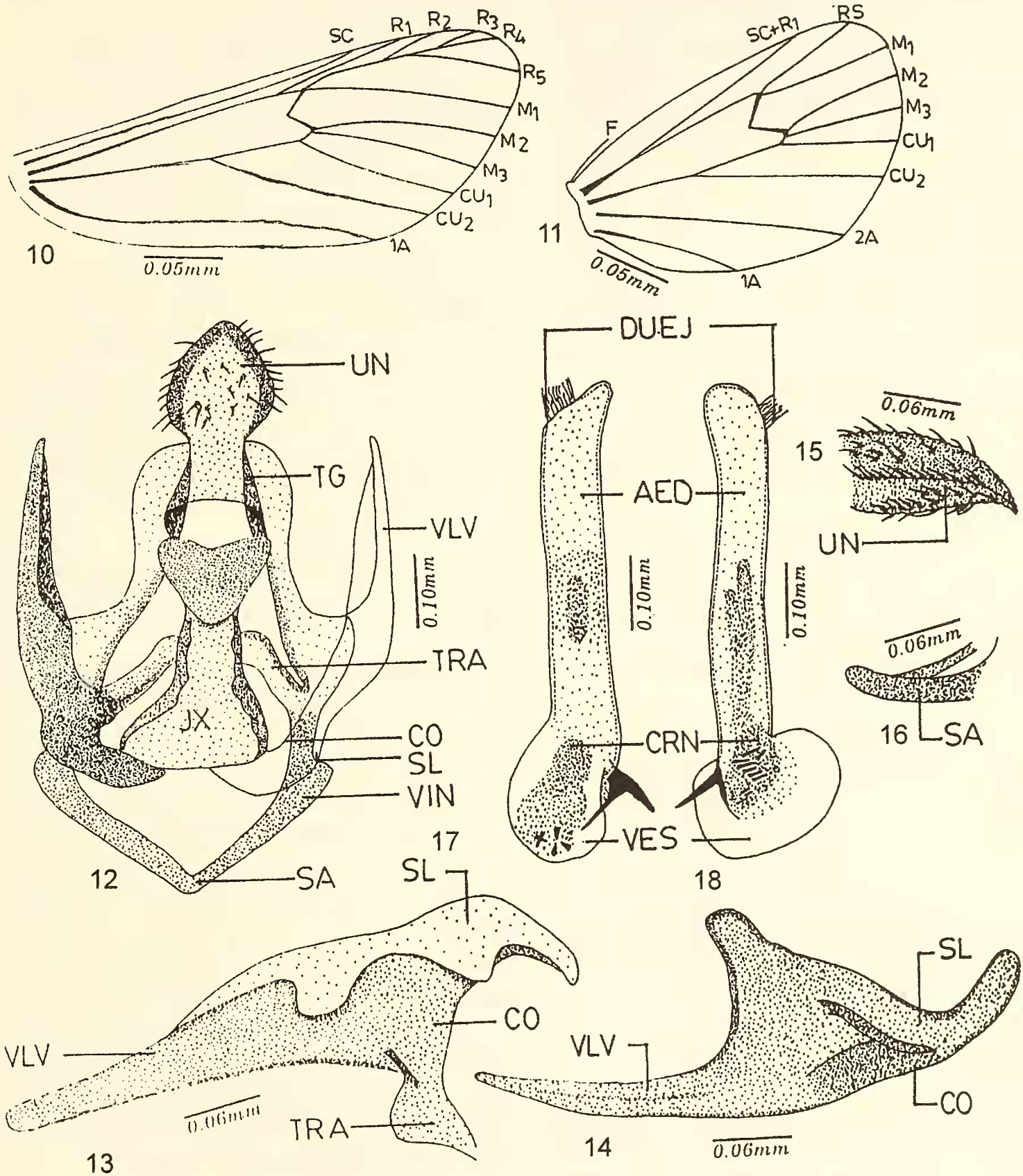
*Juxtarctia monospinuatus* sp. nov.

(Figs 10-18)

Head with vertex and frons covered with orange yellow scales. Antenna with scape studded with orange scales, flagellum black. Eyes golden brown with black spots. Labial palpus porrect, reaching lower level of frons, first and second segments decorated with black scales, underside fringed with yellow; third segment black.

Thorax covered with white scales; meso and metathorax with black spots; collar orange, spotted with black; tegula covered with white scales and black spots. Forewing with ground colour white; a basal black spot; three subbasal black spots; an antemedial series of five spots, spots below cell and 1A placed outwards; a medial series of seven spots, strongly angled outwards on lower margin of cell; spots in each angle and one beyond discocellulars; two postmedial series of nine spots each, first one bent outwards from costa, then inwardly oblique below median nervure, second excurved in middle, incurved below Cu<sub>1</sub>; submarginal series of spots on each side of veins R<sub>4</sub>-Cu<sub>1</sub>, those on M<sub>2</sub> placed outwards; a marginal series of six spots; fringe white; underside orange yellow





Figs 10-18: *Juxtartia monospinuatius* sp. nov., 10. Forewing, 11. Hindwing, 12. Male genitalia, 13. Valva (left) - ventrolateral view, 14. Valva (left) - inner view, 15. Uncus - lateral view, 16. Saccus - lateral view, 17. Aedeagus - dorsal view, 18. Aedeagus - ventral view

except at apical area, spots larger and diffused; veins  $R_2$ - $R_5$  stalked from upper angle of cell;  $M_2$  arising from just above lower angle of cell. Hindwing with ground colour orange yellow; two antemedial spots on costa and cell; two black spots present inside discocellulars and another one outside of discocellulars; submarginal spots on each side of  $R_5$ ,  $M_2$ ,  $Cu_2$  and 2A; marginal spots on either side of  $M_1$ ,  $M_2$ ,  $M_3$  and  $Cu_2$ , spots diffused on underside and conjoined; veins  $R_s$  and  $M_1$  originating from upper angle of cell;  $M_2$  from above lower angle of cell;  $Cu_1$  well before lower angle of cell. Legs with coxae covered with yellow scales, fore coxae with large black patches; femora black above, pale yellow ventrally; tibia and tarsi decorated with yellow scales, streaked with black; outer tibial spurs half the length of inner ones.

Abdomen clothed with orange yellow scales; short segmental bands on dorsal side, except on first two segments; a large rounded spot present on last segment; lateral and sublateral series of black spots; underside with black bands on seventh, eighth and ninth segments.

Male genitalia with uncus short, broad, strongly swollen on dorsal side, setosed, tip slightly curved and sharply pointed; tegumen broad, much longer than vinculum; vinculum short, broad, sclerotized, with outer walls slightly produced; saccus small, V-shaped. Valva simple, divided into two halves, broad at base, narrow and cylindrical above; sacculus distinct, costa defined; saccular margin produced into a rounded flaplike projection; cucullus and valvula fused; juxta exceptionally large and unique, broad at base, with two parallel sclerotized dilated flaps, narrow at both ends, supporting triangular bifurcated, well developed structure above these flaps; transtilla broad, semisclerotized.

Aedeagus long, tip rounded, both of its walls equally sclerotized, a distinct sclerotization at distal end, bearing a large distinct spine;

vesica armed with denticles and large number of spines.

Female genitalia not examined.

**Wing Expanse (Half):** Male 24 mm.

**Material Examined:** Holotype: INDIA: Assam: North Cachar Hills, Jatinga, 900 m, 29.ix.1995, one male, Coll. A.P. Singh. Paratypes: INDIA: Assam, North Cachar Hills, Jatinga, 900 m., 11.ix.1991, one male; 25.ix.1995, one male; 1.x.1995, one male, Coll. A.P. Singh.

**Remarks:** The new species *monospinuat* is closely allied to *bispinuat* sp. nov. on the basis of general ground colour, ornamentation of wings, labial palpus and abdomen. It is distinct from *bispinuat* with respect to uncus having a pointed tip, valva with prominent saccular finger-like projection and an altogether different juxta. Aedeagus of this species is also distinct from the type species.

**Etymology:** The species has been named after the single prominent spine in the vesica of aedeagus.

**Abbreviations:** 1A: First anal vein, 2A: Second anal vein, AED: Aedeagus, ANT.APO: Anterior apophyses, CE.B: Cervix Bursae, CO: Costa, CRN: Cornuti, CRP.BU: Corpus Bursae,  $Cu_1$ : First Cubital Vein,  $Cu_2$ : Second Cubital Vein, DU.BU: Ductus bursae, DU.EJ: Ductus ejaculatorius, F: Frenulum, JX: Juxta,  $M_1$ : First median vein,  $M_2$ : Second median vein,  $M_3$ : Third median vein, PAP.A: Papilla analis, PO.APO: Posterior apophyses,  $R_1$ : First radial vein,  $R_2$ : Second radial vein,  $R_3$ : Third radial vein,  $R_4$ : Fourth radial vein,  $R_5$ : Fifth radial vein,  $R_s$ : Radial sector, SA: Saccus, Sc: Subcosta,  $Sc+R_1$ : Stalk of  $Sc+R_1$ , SIG Signum, SL: Sacculus, TG: Tegumen, TRA: Transtilla, UN: Uncus, VES: Vesica, VIN: Vinculum, VLV: Valva.

#### ACKNOWLEDGEMENT

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NEW DESCRIPTIONS

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